

CYBERSPACE NETWORK OPERATIONS TECHNICIAN (MOS 255Z)

By CW5 Todd M. Boudreau

This article details the events that shaped development of the Army's senior cyberspace network operations technicians, MOS 255Z and outlines the shifting responsibilities that are making repurposing of the MOS necessary.

Where We Were

To understand the MOS 255Zs' evolution, it is essential to consider the legacy enlisted-level accessions MOS and identify some difficulties in the past. Then we will be able to share strategies for mitigating past deficiencies that evolve around the new concepts for W5 capper MOS 255Z.

Simply put, MOS 250N has primarily focused on the wide area network design and implementation. Most Signal warrant officers who have been in the field for the last decade recognize the clear line of demarcation between the 250N and the 251A. This line has been

drawn between the WAN, or the outside network and the metropolitan, campus, and/or local area network (MAN/CAN/LAN), or the inside network. The line of effort for the 250N focuses on reach-back (or in some cases reach between) while the LOE for the 251A is on the "backside" network design and implementation, essentially connectivity within an organizational structure.

The problem at hand is that technology and current networking trends serve to blur these lines. For example, the DROID, one of the latest among the smart phones, has the ability to enable itself as a wireless fidelity hotspot. It then can be connected to (i.e., organizational structure) as well as networked through (i.e., reach-back). As the Army's premier cyberspace network management technicians begin to see these devices, technologies, and techniques on the modern cyberspace battlefield, they must embrace both aspects and take ownership of transport regardless of user, organi-

zation, or level of network.

MOS 251A technicians have primarily focused on data systems and data systems integration. However, such a focus has often required appreciable time and effort performing MAN/CAN/LAN design and implementation. Although networking basics are taught in both the Warrant Officer Basic Course and the Warrant Officer Advance Course, it has often left the 251As to learn and discover much on their own. This is because the immediate access layer and distribution layer network routers and switches that their application systems connect to in a MAN/CAN/LAN environment, have been viewed as a part of the 251A's system.

Concurrently, the MOS 254A environment has shifted from duties that were envisioned back in its inception to those which mirror the 251A. MOS 254A was designed to be the Signal technical expert in non-Signal, maneuver formations responsible for areas such as maneuver Signal operations, combat net radios, communications security, and Signal support to tactical operation centers. Since its inception, however, several significant shifts have occurred. First, the bandwidth and computing power of today's digital TOC has increased to equal (and in some cases surpass) that of the nominal center in which MOS 251A is found. Second, Army transformation and modularity have all but negated the terminology "non-Signal maneuver formation." The brigade combat team today has unique organic Signal support. Therefore, MOS 254A has shifted to overlap MOS 251A in more than 80% of all critical tasks. Today, when MOS 251A and 254A are both collocated in a section, the

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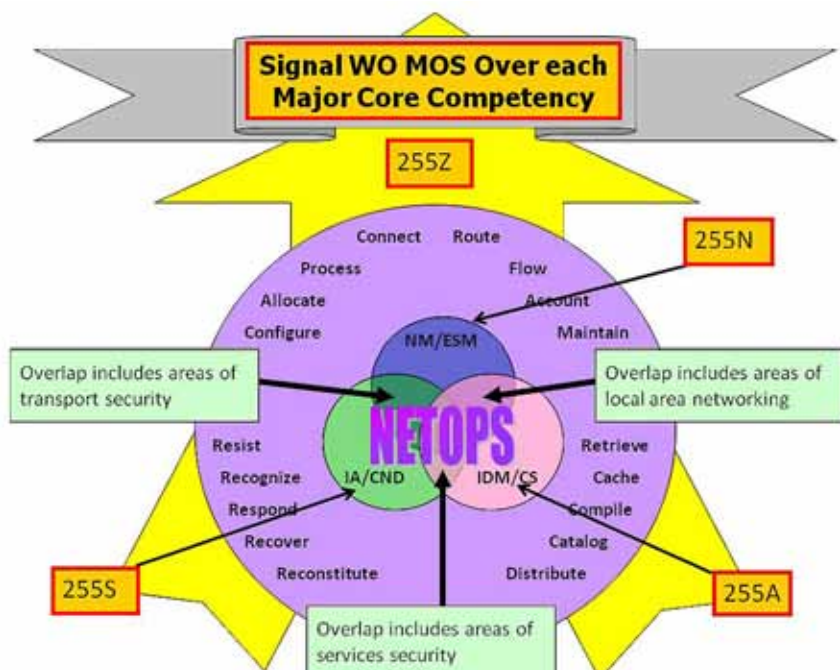


Figure 1

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254A technician most often takes responsibility for the servers and services while the 251A technician takes ownership of IA.

Most of our 255Z technicians have progressed through career paths that often lacked true career progression as a goal, with a propensity to myopically move into a single-track. The small numbers of W5 authorizations in the Signal Regiment may have not only allowed this, but in some cases exacerbated this. However today there is a huge shift in progressing from this point. Now Signal warrant officers are promoted to the rank of CW5 with extremely varied and diverse backgrounds. While the nominal senior CW4 has tracked within a single MOS, for the most part, the constantly changing world of cyberspace and the fact that many have found themselves having to learn the theory and skills of their sister MOS has created senior Signal warrant officers who are able to interact quite intelligently in each of the elements of NetOps. This has created a whole new dynamic in our senior Signal warrant officer population that is beneficial to the Signal Regiment and the Army as a whole.

A few other areas of influence affect our future. There is a massive change occurring in the OE in which we find ourselves. The OE which existed from the Korean War through the cold war era, was characterized as having predictable requirements, moving at a slow developmental pace of technology, and existing with a myriad of specialized expertise in single areas; often dislocated with each other. Subsequent to that period our OE has shifted to one of vastly unpredictable requirements, moving from fairly well known technologies to one of a rapid and dynamic pace of technological change. Today our OE shifts from understood and accepted cylinders of excellence to the necessity of highly specialized skills that also have a broader understanding of full spectrum operations (i.e., one that is prepared for and can em-

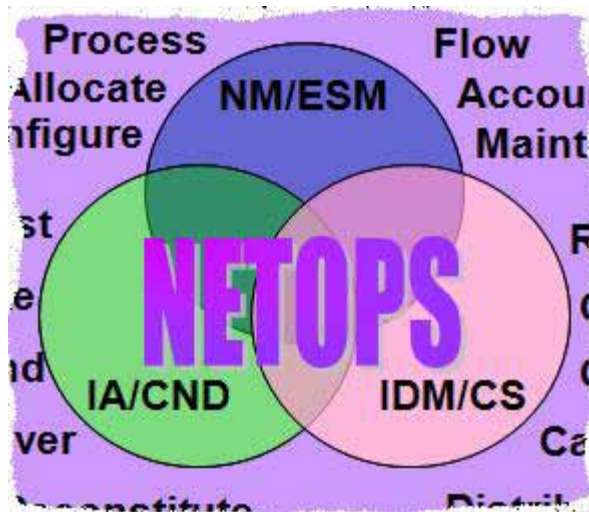


Figure 2

brace ambiguity, together). Finally, in today's state of constant military activity, our Army's senior leaders have declared that our OE will remain unpredictable with noted characteristics and influences such as the exponentially expanding role of technology, the necessity to understand and make use of cultural differences and influences, and the greater role of joint, interagency, intergovernmental, and multinational cooperation.

I learned new terminology at our Signal Center's Signal Conference last December. The acronym VUCA was used to express our new OE as Volatile, Uncertain, Complex, and Ambiguous. This change from predictable to unpredictable, from static to dynamic, from simple to complex requires a whole new way of growing our Army's senior leaders, including senior Signal warrant officers.

Today we must ask the question "Is our current Professional Military Education able to prepare our Army's warrant officers for such an OE?" And we also must ask ourselves, "Do we have formalized career paths, to properly grow and develop our Signal warrant officers in a manner that ensures they will have the requisite knowledge, skills, and attributes to be successful in senior positions where we are currently looking to assign them?"

Let's look more closely at these questions along with some related concerns.

Where We Are Heading

MOS 255Z technicians, a W5 capper MOS for 255A, 255N, and 255S, will use decades of ever-widening NetOps experiences to focus past the individual applications, systems, and equipment to shape the

intricacies of the interrelationships with the other NetOps elements. Such officers will be the true experts and masters in their craft and advisors to senior leadership on complex and complicated NetOps issues. As such, repurposed and properly developed MOS 255Z technicians will be the Army's premier technical and tactical advisors for full spectrum network operations at any echelon of command or support activity of the U.S. Army or joint staff sections assigned to theater combatant commanders or allied armies.

The NetOps construct includes all three elements in the cyberspace realm--CyCM, CyNM, and CyD. Although NetOps manifests itself only within the coordinated synergy of these three elements, the true goal is to center NetOps on the mission and intent of the war fighting commander. It is the ability to properly position the synergy of the NetOps center-of-mass that makes the 255Z a force multiplier and an invaluable asset. (See figure 1)

Serving at corps, ASCC, DRU, and joint levels, the 255Z provides leadership, guidance, technical input, and direction to subordinate elements, staff agencies, and field commanders while providing leader development, mentorship, advice, and counsel to NCOs, other WOs, and branch officers. MOS 255Zs have special mentorship responsibil

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ities for other WOs at all levels and provide essential advice to commanders on Signal technical and WO issues.

MOS 255Zs continue to sharpen their knowledge of personnel force integration functions for doctrine, training, and personnel as it pertains to the Signal Corps. In addition, 255Zs gain and maintain familiarity: (1) with the constitutional, statutory, and regulatory basis for the force projection Army and the capabilities that are sustained through management of doctrinal, organizational, and materiel change; (2) with Army organizational roles, functions, and missions, especially at the ACOM/ASCC/DRU and Army Secretariat/Staff levels; and (3) with the force management processes, from the determination of force requirements through the resourcing of requirements and the assessment of their utilization in order to accomplish Army functions and missions in a JIIM environment.

Until recently, we have had less than 15 CW5 positions in the Signal Regiment. (See figure 2). We were doing well to have 8-10 CW5s to put into them. Today, we are in the process of growing from 16 positions to 28-30 positions. We can do this for two reasons. First, 3.5 percent of a total warrant officer branch population can be W5 positions. Second, we have grown in our total population from less than 400 Signal warrant officer authorizations in the Active Component in 2001 to well over 800 today. We will do this, however, for two other reasons. First, we need to provide our highly qualified Signal warrant officers who have demonstrated potential the ability to compete for promotion in a reasonably competitive yet equitable manner. Second, many units are requesting a senior Signal warrant officer (i.e., CW5) due to the attributes displayed by our current population of CW5s.

In the past, we have had Signal CW5 positions in Signal brigades and a smattering of other places around the Army and DoD organi-

zations. We are moving and growing positions to the corps level and above. (See figures 3 and 4) Note that all "newly grown" positions require a "bill payer" position (i.e., one that is already authorized which must be converted to a CW5 position.)

Senior Cyberspace Network Operations Technicians: Masters of Their Arts

Who are these senior cyberspace network operations technicians that are being requested? What makes them such a desired commodity? First are their knowledge, skills, and attributes.

Today's senior Signal warrant officers are quite different from those of the past.

Today's senior Signal warrant officers are among the most experienced Army officers with more than a decade of combat operations under their belts. They have usually attended their WOAC, WOSC, and/or WOSSC in the last four years, and thus are among the most experienced and highest educated our Army has ever seen.

Their knowledge in communications theory is unsurpassed. With the recent changes to WOBC and WOAC and the new WOSC branch follow-on course that will begin soon, it is only getting better. The practical skills these senior Signal warrant officers possess have been shaped and sharpened through over a decade of wartime experience. Finally, our professional development and the rise in overall professionalism within the warrant officer cohort have instilled a set of officer attributes that is unparalleled.

Our senior warrant officers are performing in a superlative manner even as they are handling more responsibilities and greater authority. They are not shunning such levels of responsibility, but instead are thriving on it.

Over and over again senior Army leaders (i.e., O-6 and above) have told me how the senior Signal

Signal WO Restructure: Current CW5 Positions

US ARMY SIGNAL COE	REGIMENTAL CWO
US ARMY SIGNAL COE	OCOS CAREER PRG MGR
US ARMY SIGNAL COE	TECH DIR
741 MI BN	COMSEC TECH
US ARMY ALLIED FORCES	COMSEC IMPLMT
US ARMY FORCES CMD	DATA PROC TECH
US FORCES KOREA CMD	OIC, COMSEC MGMT OFF
US ARMY CENTRAL CMD	MCP, SR SIG TECH
US ARMY EUROPEAN CMD	7TH ARMY MCP, SR SIG TECH
US ARMY PACIFIC CMD	MCP, SR SIG TECH
US ARMY NET ENTPRS TECH CMD	9TH SC(A), SR SIG TECH
7TH SIGNAL CMD	SR SIG TECH
7TH SIGNAL BDE (5SC(T))	SR SIG TECH
11TH SIGNAL BDE HHC	SR SIG TECH
1ST SIGNAL BDE HHC	SR SIG TECH
35TH SIGNAL BDE HHC	SR SIG TECH

Figure 3

warrant officers not only bring practicality and relevancy into their organizations, but how they are often the unsung heroes who tackle any problem, no matter how complex, and provide some of the best solutions.

So What is Left?

There is much left to be improved. Warrant officer education, professional development, and career opportunities still have much to be improved. The Military Occupational Classification Structure action that was submitted in 2009 to repurpose the Signal warrant officer MOS is only a beginning to the adjustments that need to be made to formulate better and more concise career paths to fully develop our senior warrant officers to their fullest potential.

Although it is improved, PME is another area that still requires much work to provide our future senior Signal warrant officers the level of education required to better prepare them to fulfill the duties and responsibilities that will be demanded of them.

Future senior warrant officers have a bright outlook for promotions and advancements.

In the career path, the on-going MOCS action has begun a three phase effort to better structure our Signal warrant officer career management field. It began by re-establishing specialized expertise in single areas. However, a great difference is that by following the NetOps construct these highly specialized areas mature into a required broader understanding of full spectrum operations (which also introduces greater ambiguity which much be addressed in the warrant officer’s professional

development). The goal is to grow our warrants into a systems integrator-manager role that can operate in either a joint, strategic, operational, or tactical arena. This is a role that requires greater JIIM/cultural understanding. Key developmental positions will be crucial to ensuring our future senior Signal warrant officers are fully developed and prepared to meet the highest command positions in our growing inventories.

Concurrently, our PME must provide our junior warrant officers a world class ‘education’ as they progress. Over the last two decades as a warrant officer I have seen our PME move from on-the-job training to a more formalized education system. Due to the dynamic pace of technological change, our current and future OE requirements mandate a formal education in theory and principles rather than hands-on or OJT. Furthermore, the expanded leadership roles of our current senior warrants, coupled with the constantly expanding technological infrastructure of our weapon systems and ill-structured problem sets they will face will make complex problem solving a critical skill by leaders who are increasingly comfortable with ambiguity. Senior warrant officer training must produce warrant grade officers who are adept with the conceptual, complex, and critical thinking skills to ensure they are adaptive, innovative, and creative thinkers.

Coupled with formalized PME and key developmental positions will be specialized training to include expanded training with Industry; advanced civil schooling; intermediate level education; and the School for Advanced Military Studies. Signal warrant officers already have a base of approved TWI programs. However, to better prepare our junior warrant officers for more of the critical senior positions, we need to look at doubling our current authorizations.

While warrant officers are included in the ACS program, not one has been funded according to any recent historical document. The ACS program not only acts as an incentive to keep some of our best Signal warrant officers, but it also provides critical graduate and post-graduate educational skills necessary to meet the demands of a number of our more specialized positions.

Finally, attendance at ILE at Fort Leavenworth, Kan., would not only prepare our senior warrant officers who are assigned to positions such as the CIO/G6, G3/5/7, and the G8, but it would be most appropriate. After all, the senior grade officers that sit to their left and right have all had the benefit of such an educational experience.

While rare, there are a very small number of high level highly specialized positions where SAMS attendance would round out the warrant officers’ KSAs and prepare them to function at such a level and be of great benefit to the organization as well. These are not too lofty goals. We have had

Signal WO Restructure:
CW5 Position Growth – Phase I

Phase 1		Phase 1 (cont.)	
JOINT		ASCC	
1	USCENTCOM	17	7TH SC(T)
2	USEUCOM	18	5TH SC(T)
3	USPACOM	19	311th SC(T)
4	USSOCOM	20	EUSA
5	USAFRICOM	CORPS	
6	USCYBERCOM	21	I CORPS
7	SHAPE	22	III COPRS
8	CIO/G6	23	XVIII CORPS
ASCC		24	V CORPS
9	USFORSCOM	TRADOC	
10	USARCENT	25	RCWO
11	USAREUR	26	OCOS
12	USARPAC	27	SIT
13	USASOC	28	CDID
14	USARCYBER		
15	INSCOM (704)		
16	NETCOM		

Figure 4

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no less than 14 warrant officers attend ILE in the last three years (5 in 2009, 9 in 2010, and 3 in 2011). We currently have four warrant officers teaching logistics electives at the Command and General Staff College. We also have three warrant officers currently attending SAMS.

In conclusion, it is a fact that promotion to W5 has become a very competitive event due to the


Signal WO Restructure:

CW5 Position Growth – Phase II & III

Phase 2		Phase 3	
JOINT		JOINT	
29	USNORTHCOM	32	USSOUTHCOM
30	USFK	33	NSA
31	DISA	34	WHCA
		ASCC	
		35	USARNORTH
		36	USARSOUTH
		37	335th SC(T)
		38	AMC
		39	USARAF
		40	USARSTRAT
		TRADOC	
		41	HRC

Figure 5

growth of the warrant officer cohort over the last 10 years. CW5(Ret) Andy Barr's article on page 16 addresses the changes in the promotion zones that have taken place to help grow senior warrant officers. He also spoke a little about the issues that we are beginning to face such as over strength of W4s and W5s in some branches. The Army is currently trying to balance several objectives: (1) to maintain the competitive nature of our senior promotions while (2) maintaining the potential for those who are best qualified to expect such future promotions and (3) maintain the average distribution grade matrix as required by law. To date, the Army has not reset the zones of consideration to meet the objectives described here. However, it has published an all ALARACT message that addresses the current backlog in PME and applies some very forceful language as to when warrant officers are expected to attend required training.

Finally, this year's promotion board will stress enforcement of the selective continuance requirement. The board has also lifted the suspension on SELCON for W4s who have been passed over twice for W5 (in an attempt to address numbers two and three above). The Army's goal is to reduce the W4 population in those branches that are over strength while maintaining a best qualified, competitive board process for those officers with the greatest potential for advancement. Currently, the Signal Regiment is still short W4s and W5s and as such should fare well through these shaping functions. 

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ACRONYM QuickScan

ASCC – Army Service Component Command
BCT – Brigade Combat Team
CAN – Campus Area Network
CGSC – Command and General Staff College
CNR – Combat Net Radio
COMSEC – Communications Security
CyCM – Cyberspace Content Management
CyD – Cyberspace Defense
CyNetOps – Cyberspace Network Operations
CyNM – Cyberspace Network Management
CyNOT – Cyberspace Network Operations Technician

DoD – Department of Defense
DRU – Direct Reporting Unit
IA – Information Assurance
ILE – Intermediate Level Education
JIIM – Joint, Interagency, Intergovernmental, and Multinational
KSA – Knowledge, Skill, and Attribute
LAN – Local Area Network
LOE – Line of Effort
MAN – Metropolitan Area Network
MOCS – Military Occupational Classification Structure
MOS – Military Occupational Specialty
NCO – Noncommissioned Officer
NetOps – Network operations

OE – Operational Environment
OJT – On the Job Training
PME – Professional Military Education
SAMS – School for Advanced Military Studies
TOC – Tactical Operation Center
VUCA – Volatile, Uncertain, Complex, and Ambiguous.
WAN – Wide Area Network
WiFi – Wireless Fidelity
WOAC – Warrant Officer Advance Course
WOBC – Warrant Officer Basic Course
WOSC – Warrant Officer Staff Course
WOSSC – Warrant Officer Senior Staff Course